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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/797,580

03/11/2004

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3691-661

4818

23117

7590

06/19/2008

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EXAMINER

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ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

06/19/2008

PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANTON DIETRICH, PHILIP J. LINGLE
JENS-PETER MULLER, and JEAN-MARC LEMMER

Appeal 2008-1077
Application 10/797,580
Technology Center 1700

Decided: June 19, 2008

Before CHUNK K. PAK, CATHERINE Q. TIMM, and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1, 2, 4-8, 11-16, 18-25, 26, 27, and 30-33. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

I. BACKGROUND

The invention relates to glass substrates coated with thin layers of metal and dielectric layers. The coated articles are used as vehicle windshields, insulating glass window units, and other types of windows (Spec. ¶ 2). Claim 15 is illustrative of the subject matter on appeal:

15. A thermally tempered coated article comprising a coating supported by a glass substrate, the coating comprising:
- a first dielectric layer;
 - a first infrared (IR) reflecting layer comprising silver located over at least the first dielectric layer;
 - a second dielectric layer located over at least the first IR reflecting layer;
 - a second IR reflecting layer comprising silver located over at least the second dielectric layer and the first IR reflecting layer;
 - a layer consisting essentially of an oxide of Ni and/or Cr located over and contacting the second IR reflecting layer;
 - a layer comprising zinc oxide located over and contacting the layer consisting essentially of the oxide of Ni and/or Cr;
 - another dielectric layer located over at least the layer comprising zinc oxide in the thermally tempered coated article; and
 - when measured monolithically following heat treatment the coated article has a visible transmission of at least 80%, a sheet resistance (R_s) of less than or equal to 2.5 ohms/square, and a normal emissivity (E) of less than or equal to about 0.04.

The Examiner maintains three main rejections under 35 U.S.C. § 103(a). To reject various dependent claims, the Examiner adds further prior art. The main rejections and subsidiary rejections are as follows:

1. Claims 1, 4-7, 11-15, 18-22, 26, 27, and 30-33 as unpatentable over Glaser (US 5,837,361 issued Nov. 17, 1998 to Glaser et al.) in view of Depauw (US 5,153,054 issued Oct. 6, 1992 to Depauw et al.);
 - a. Claims 2 and 16, as above but further in view of any one of Anzaki (US 6,316,110 issued Nov. 13, 2001) or Arbab (US 6,398,925 issued Jun. 4, 2002);
 - b. Claims 8 and 23 as unpatentable over Glaser and Depauw as applied in the above rejection (1) and further in view of any one of Baldwin (US 6,472,636 issued Oct. 29, 2002) or Sol (US 6,492,619 issued Dec. 10, 2002);
2. Claims 1, 4, 5, 11-15, 18-20, 26, 27, and 30-33 as unpatentable over Hartig (US 5,557,462 issued Sep. 17, 1996) in view of Depauw;
 - a. Claims 2 and 16 as unpatentable over Hartig and Depauw as applied in the above rejection (2) and further in view of any one of Anzaki or Arbab;
 - b. Claims 6, 7, 21, and 22 as unpatentable over Hartig and Depauw as applied in the above rejection (2) and further in view of Koch (US 5,718,980 issued Feb. 17, 1998);
 - c. Claims 8 and 23 as unpatentable over Hartig and Depauw as applied in the above rejection (2) and further in view of any one of Baldwin or Sol;
3. Claims 1, 4, 5, 11, 15, 18-20, 26, 30, and 32 unpatentable over Lemmer (US 6,336,999 issued Jan. 8, 2002) in view of Depauw;

- a. Claims 2 and 16 as unpatentable over Lemmer and Depauw as applied in the above rejection (3) and further in view of any one of Anzaki or Arbab;
- b. Claims 6, 7, 12, and 22 as unpatentable over Lemmer and Depauw as applied in the above rejection (3) and further in view of Koch;
- c. Claims 8 and 23 as unpatentable over Lemmer and Depauw as applied in the above rejection (3) and further in view of any one of Baldwin or Sol;
- d. Claims 12-14, 27, 31, and 33 as unpatentable over Lemmer and Depauw as applied in the above rejection (3) and further in view of any one of Hartig or Applicant's Disclosure.

Appellants state that all the rejected claims are under appeal (Br. 5), they, however, request review of only main rejections 1, 2, and 3 listed above and two of the subsidiary rejections (2b and 3b). The Examiner maintains all of the rejections (Ans. 3). Therefore, the claims subject to the non-argued rejections will stand or fall along with the claims of the associated main rejections and will be grouped accordingly.

II. DISCUSSION

A. Glaser in view of Depauw

Appellants present separate arguments under separate headings for various claims. We consider the claims in accordance with the headings. Claims not separately argued stand or fall with the argued claim from which they depend.

Because claim 15 is broader in some respects than claim 1, we begin our analysis with claim 15. Claim 15 is directed to a thermally tempered coated article including a glass substrate and a coating. In somewhat simplified terms, the coated article comprises the following layers from top to bottom where “//” indicates that other layers may be present between the named layers:

dielectric//**ZnO/NiCrO_x/Ag**//dielectric//Ag//dielectric//glass substrate

Claim 15 also requires the article have specific properties, i.e., a visible transmission of at least 80%, a sheet resistance (R_s) of less than or equal to 2.5 ohms/square, and a normal emissivity (E) of less than or equal to about 0.04.

In contending that the Examiner erred in rejecting claim 15 over Glaser and Depauw, Appellants rely upon their arguments advanced against claim 1 (Br. 16-17). Appellants contend that Glaser fails to disclose or suggest a zinc oxide (ZnO) layer located over and contacting the layer consisting essentially of an oxide of NiCr (NiCrO_x layer); that Glaser fails to disclose or suggest heat treating; and that Glaser fails to disclose or suggest the claimed properties (Br. 13-14). Appellants further contend that Depauw does not cure the flaws of Glaser because Depauw does not suggest placing a ZnO layer over a NiCrO_x layer (Br. 14). Further, according to Appellants, even if the combination were made the combination fails to suggest the properties recited in the claim (Br. 15). Appellants also contend that their unexpected results rebut any possible prima facie case (Br. 15-16).

The Examiner responds that Depauw shows that it was known in the prior art to deposit a ZnO layer above a sacrificial layer to protect the silver layer from corrosion, and that it would have been obvious to one of ordinary

skill in the art to place a ZnO layer over the NiCrO_x sacrificial layer of Glaser to obtain the desired corrosion protection (Ans. 11-12). The Examiner further contends that Depauw shows that it was known in the art to heat treat to make the coated glass suitable for automotive applications, and further that, based on the identity of materials and structure in the combination of references, it appears that the coated articles inherently possess the claimed properties (Ans. 13). Further, the Examiner contends that Appellants have failed to show that the alleged unexpected results are related to the ZnO layer and also contends that the results would have been expected given the teachings of Depauw (Ans. 15-16).

The issue on appeal arising from the contentions of Appellants and the Examiner is: have Appellants shown that the Examiner reversibly erred in concluding there is a prima facie case of obviousness due to an error in finding that Depauw would have suggested forming a thermally tempered coated article having the structure of claim 15 and, if not, have Appellants overcome the prima facie case of obviousness with a showing of unexpected results?

We answer this question in the negative.

The evidence of record supports the following Findings of Facts (FF):

1. Coated articles for low-E window applications such as insulating glass window units for buildings and vehicles were known in the art (Spec. ¶ 2; Glaser, col. 1, ll. 15-21; Depauw, col. 1, ll. 30-40).
2. According to Glaser, the coated articles consisted of at least a metallic layer, such as a silver layer, arranged between layers of dielectric, such as layers of metal oxide or a nitride such as Si₃N₄, and, in

- general, the silver layer is covered with a thin layer of metal called the “sacrificial” layer (Glaser, col. 1, ll. 23-32).
3. The silver layer functions as a thermal insulating layer (Glaser, col. 1, ll. 33-37).
 4. The dielectric layers function to “act interferentially on the optical appearance of the substrate” and also “enable the silver layer to be protected from chemical and/or mechanical attack” (Glaser, col. 1, ll. 37-40).
 5. The sacrificial layer protects the silver within the functional layer from oxidizing by reacting with any oxide coming into contact with it (Glaser, col. 3, ll. 49-61; Depauw, col. 5, ll. 64-66).
 6. Glaser discloses that sacrificial layers are based on metals of the niobium, titanium, tin or tantalum type or on metal alloys of the nickel-chromium (NiCr), tantalum-chromium or niobium-chromium type (Glaser, col. 3, ll. 49-53).
 7. Depauw discloses sacrificial layers of titanium, aluminum, stainless steel, bismuth, tin and mixtures (alloys) of these (Depauw, col. 3, ll. 46-48).
 8. Depauw describes depositing a multilayer coating including a layer of ZnO over a sacrificial layer to preserve the optical properties and to improve corrosion resistance (Depauw, col. 3, ll. 14-65).
 9. Depauw found that the presence of the ZnO layer permits some reduction in the thickness of the sacrificial metal layer and that this assists in achieving a high light transmission since the sacrificial metal is more easily, completely, and uniformly oxidized (Depauw, col. 6, ll. 17-22).

10. According to Depauw,

It seems that the improvements are primarily achieved by ensuring a low thickness of zinc oxide. The location of this thin layer of zinc oxide above the sacrificial metal layer in the overcoat is also important. Another factor is that the zinc oxide may diffuse through the sacrificial barrier layer to effect a degree of passivation of the silver. It may also be that the presence of the zinc oxide enhances the oxidation of the sacrificial metal such that while oxidation of the sacrificial metal is completed oxidation of the silver is avoided. A said zinc oxide layer can be formed so that it is very compact and substantially prevents atmospheric oxygen from penetrating to the silver layer.

(Depauw, col. 4, ll. 6-18.)

11. The prior art provides guidance on how to select the composition and thickness of the layers to obtain desired resistivity, light transmission, and emissivity (Depauw, col. 7, l. 51 to col. 9, l. 2; Glaser, col. 2, ll. 1-13; Glaser, col. 4, ll. 25-33).
12. Glaser's object is to lower emissivity and increase light transmission by depositing a layer of ZnO below a silver layer (Glaser, col. 2, ll. 40-54).
13. Glaser discloses that it is possible to manufacture double glazing panels whose emissivity is less than or equal to 0.05, preferably less than 0.045, but with light transmission nevertheless very high; light transmission may in fact be greater than or equal to 75%" (Glaser col. 4, ll. 34-41) and includes single layer silver examples having

- emissivity of 0.03 and light transmission of 77% (*see*, e.g., Example 1, col. 6, ll. 58-59).
14. Depauw discloses emissivity levels of about 0.08 and light transmission of up to 87% (Depauw, col. 9, ll. 3-6).
 15. It was known in the art to heat treat (e.g., thermally temper, heat bend and/or heat strengthen) coated articles (Spec. ¶ 2) and it was known that, in the case of automotive windows, the sacrificial metal protects the silver layer during heat treatments such as tempering (Depauw, col. 4, ll. 36-40).
 16. Depauw indicates that heat treatment improves light transmission properties by further oxidizing the sacrificial layer (Depauw, col. 8, ll. 9-30).
 17. Appellants state that they found that the use of a ZnO layer over a NiCrO_x layer, as a opposed to a tin oxide (SnO) layer, unexpectedly “results in higher visible transmission and thus improved optical characteristics, lower sheet resistance (R_s) (and lower emittance) and thus improved solar characteristics, and/or improved thermal stability upon heat treatment (HT).” (Spec. ¶ 9).
 18. Appellants state that they found that the use of a ZnO layer over a NiCrO_x layer, as a opposed to a tin oxide (SnO) layer, unexpectedly “results in higher visible transmission and thus improved optical characteristics, lower sheet resistance (R_s) (and lower emittance) and thus improved solar characteristics, and/or improved thermal stability upon heat treatment (HT).” (Spec. ¶ 9).
 19. Appellants state that the surprising results are associated with the ...ZnO/Ag/NiCrO_x/ZnO ... layer stack (Spec. ¶¶ 10, 18, and 30).

20. Appellants state that “the overall coating is better able to withstand heat treatment at high temperatures so that a heat treated coated article with lower sheet resistance and emissivity is obtainable. Moreover, it is also surprising that the use of zinc oxide in layer 22 (as opposed to only tin oxide for example) causes the coated article to have higher visible transmission following heat treatment and lamination.” (Spec. ¶ 31.)
21. Paragraph 46 of the Specification states that “[i]t can be seen by comparing the Example above to Examples 1-3 in U.S. Patent No. 6,686,050 [Lingle] that the Example above achieves significantly higher visible transmission and significantly lower sheet resistance than do articles of the Examples in the ‘050 Patent.”
22. The layer systems of Appellants’ Example and Lingle’s Examples 1-3 are as follows:

Appellants layers	Thicknesses	Lingle	Thicknesses
Si3N4	109	SixNy	250
SnO2	127	SnOx	150
ZnAlOx	129		
NiCrOx	25	NiCrOx	16
Ag	92	Ag	105
ZnAlOx	115	NiCrOx	18
SixNy	126	SixNy	170
SnO2	536	SnO2	650
NiCrOx	25	NiCrOx	16
Ag	97	Ag	105

ZnAlOx	109	NiCrOx	18
SixNy	187	SixNy	170
		TiOx	100
Glass Substrate			

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”).

“An obviousness determination is not the result of a rigid formula disassociated from the consideration of the facts of a case. Indeed, the common sense of those skilled in the art demonstrates why some combinations would have been obvious where others would not.” *Leapfrog Ent., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (*citing KSR Int’l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1739 (2007) (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”)). *See Pfizer, Inc. v.*

Apotex, Inc. 480 F.3d 1348, 1366 (Fed. Cir. 2007) (*quoting In re Jones*, 958 F.2d 347, 350 (Fed.Cir.1992) ("Every case, particularly those raising the issue of obviousness under section 103, must necessarily be decided upon its own facts.")).

Applying the preceding legal principles to the Factual Findings in the record of this appeal, we determine that the Examiner has established a *prima facie* case of obviousness.

Both Glaser and Depauw are directed to forming the type of low-E coated articles claimed by Appellants (FF 1). As evidenced by Glaser and Depauw, it was known in the art to use a silver layer as a thermal insulating layer, to deposit a layer called a sacrificial layer onto the silver layer to protect the silver layer from oxidation, as well as include dielectric layers for their optical and protective properties (FF 2-5). Glaser suggests the use of an oxidizing NiCr layer as a sacrificial layer (FF 5 and 6). Depauw discloses depositing a ZnO layer above a sacrificial layer to enhance both optical properties and corrosion resistance (FF 8). One would, therefore, expect the predictable result of enhancing optical and corrosion resistance properties when depositing a ZnO layer over a NiCrO_x sacrificial layer. The evidence supports the Examiner's conclusion that the claimed layer structure would have been obvious to one of ordinary skill in the glazing art.

We cannot agree with Appellants that Depauw's lack of a disclosure of NiCrO_x as one of the substances capable of serving as the sacrificial layer somehow renders the rejection untenable. Depauw describes depositing ZnO over a sacrificial layer (FF 8). The sacrificial layer can be made from any of several different substances some of which are mentioned in Glaser for the same purpose (FF 6 and 7). The variety of substances listed by

Depauw would have indicated to one of ordinary skill in the art that a ZnO layer would have proven useful over any type of sacrificial layer. Glaser provides evidence that oxidizing NiCr was a known sacrificial layer material (FF 6). The prior art as a whole supports the determination that it would have been obvious to one of ordinary skill in the art to add a ZnO layer over a NiCrOx layer with the expectation of obtaining improved corrosion resistance and optical properties.

The evidence further supports a finding that constructing a thermally tempered coated article with the properties recited in claim 15 (visible transmission of at least 80%, sheet resistance less than or equal to 2.5 ohms/square, and normal emissivity less than or equal to about 0.04) would have been within the capabilities of those of ordinary skill in the art. *See KSR*, 127 S. Ct. at 1740 (stating that “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill”). The prior art applied by the Examiner provides evidence that it was known in the glazing art to coat glass with various thin layers of metals and metal oxides to obtain low emissivity (low-E), highly light transmissive tempered coated articles (FF 1, 2, and 16). Both Glaser and Depauw provide guidance on selecting layer compositions and thicknesses for optimizing visible transmission, resistivity, and emissivity (FF 9-12). Moreover, the ranges of visible transmission, resistance, and emissivity of claim 15 appear to be obtainable through routine optimization of the layer compositions and thicknesses given the values for these properties disclosed in the prior art (FF 13-14). Under the circumstances, the burden shifts to Appellants to

show the property results would have been unexpected to one of ordinary skill in the glazing art. *See In re Aller*, 220 F.2d 454, 456 (CCPA 1955) (“it is not inventive to discover the optimum or workable ranges by routine experimentation.”); *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980) (a prima facie case of obviousness may be rebutted where the results of optimizing a result effective variable are unexpectedly good).

Appellants contend that they have unexpectedly found that locating a ZnO layer over a NiCrO_x layer results in higher visible transmission, improved thermal stability upon heat treatment, lower sheet resistance, and lower emissivity (Br. 13). Appellants cite paragraphs 9, 10, 18, 30, 31, and 46 of their Specification for support (Br. 13). Paragraphs 9, 10, 18, 30, and 31 merely state that unexpected results are obtained. These paragraphs do not provide any supporting evidence or reference to any supporting evidence (FF 17-19). Paragraph 46 states that comparing Appellants’ Example to Examples 1-3 in U.S. Patent No. 6,686,050 (Lingle) shows that Appellants’ coated articles achieve significantly higher visible transmission and significantly lower sheet resistance than do articles of the Examples of Lingle (FF 20).

As pointed out by the Examiner, there are differences in the coated articles of the comparison such that it is not clear that the so called unexpected results are actually due to the ZnO/NiCrO_x layer combination (Ans. 15; *see also* FF 21). “In order for a showing of ‘unexpected results’ to be probative evidence of non-obviousness, it falls upon the applicant to at least establish: (1) that there actually is a difference between the results obtained through the claimed invention and those of the prior art, ... and (2) that the difference actually obtained would not have been expected by one

skilled in the art at the time of invention.” *In re Freeman*, 474 F.2d 1318, 1324 (CCPA 1973) (citations omitted). Due to the presence of unfixed variables, it is unclear if there is truly a difference in results. *See In re Dunn*, 349 F.2d 433, 439 (CCPA 1965) (“we do not feel it an unreasonable burden on appellants to require comparative examples relied on for non-obviousness to be truly comparative. The cause and effect sought to be proven is lost here in the welter of unfixed variables.”).

Moreover, as further pointed out by the Examiner, Depauw provides evidence that the results, in fact, would have been expected (Ans. 15-16; FF 17-19). Depauw discloses that the presence of a thin ZnO layer over the NiCrO_x layer assists in achieving high light transmission and that heat treatment also improves light transmission (FF 9, 10, and 16).

We also note that claim 15 is not commensurate in scope with the data proffered by Appellants. The data relates to a ZnAlO_x layer, but the claims encompass any zinc oxide layer. “[O]bjective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.” *In re Greenfield*, 571 F.2d 1185, 1189 (CCPA 1978).

We also determine that Appellants’ vague and general statements as to what the examples show along with the assertion that the results are superior amount essentially to mere pleading. A mere pleading unsupported by proof or showing of facts is inadequate. *In re Borkowski*, 505 F.2d 713, 718 (CCPA 1974).

We conclude that Appellants have not shown that the Examiner reversibly erred in finding that Depauw would have suggested forming a thermally tempered coated article having the structure of claim 15, and that,

taking into account Appellants' showing of unexpected results, the totality of the evidence supports a prima facie case of obviousness.

Turning to claim 1, the issue is the same as that addressed above and for the reasons stated above, we also conclude that Appellants have not shown that the Examiner reversibly erred.

Appellants argue claim 11 separately and claims 30 and 32 as a separate group (Br. 16-17). These claims recite slightly different visible transmission, emissivity, and sheet resistance values. Again, the prior art provides guidance for performing routine experimentation regarding layer composition and thickness to optimize these properties. For the reasons stated above with regard to claim 15, we conclude that Appellants have not shown the Examiner reversibly erred in concluding there was a prima facie case of obviousness.

For the above reasons, we sustain the rejection of claims 1, 4-7, 11-15, 18-22, 26, 27, and 30-33 under 35 U.S.C. § 103(a) as unpatentable over Glaser in view of Depauw. Because Appellants do not request review of the rejection of claims 2 and 16 over Glaser and Depauw further in view of Anzaki or Arbab or the rejection of claims 8 and 23 over Glaser and Depauw further in view of Baldwin or Sol, we summarily sustain those rejections.

B. Hartig in view of Depauw

We next turn to the rejection over Hartig in view of Depauw.

Based on the contentions of Appellants and the Examiner the dispositive issue is: have Appellants shown that the Examiner reversibly erred in finding that Hartig discloses or suggests a NiCrO_x sacrificial layer?

We answer this question in the affirmative.

Hartig describes the following layer system:

glass/Si₃N₄/NiCr/Ag/NiCr/Ag/NiCr/Si₃N₄ (Hartig, col. 2, l. 39).

The NiCr layers are disclosed as nucleation layers (Hartig, col. 10, ll. 36-39). Hartig discloses that “[i]f nichrome is used, it is preferred that at least a portion of the chrome be converted during the sputtering process into a nitride” (Hartig, col. 10, ll. 40-43). The Examiner does not cite any portion of Hartig to support the finding that Hartig discloses NiCrO_x in the NiCr layer. Moreover, the NiCr layer of Hartig is termed a nucleation layer rather than a sacrificial layer, it is nitrided, and in contact with a nitride layer, not an oxide layer. The evidence does not support the Examiner’s finding that the NiCr layer of Hartig is a NiCrO_x sacrificial layer.

We do not sustain the rejection of claims 1, 4, 5, 11-15, 18-20, 26, 27, and 30-33 over Hartig in view of Depauw. Because the references added to reject claims 2, 6-8, 16, and 21-23 do not, as applied by the Examiner, cure the deficiency discussed above, we do not sustain the rejection of claim 2 and 16 over Hartig and Depauw and further in view of any one of Anzaki or Arbab; the rejection of claims 6, 7, 21, and 22 over Hartig and Depauw and further in view of Koch; or the rejection of claims 8 and 23 over Hartig and Depauw and further in view of any one of Baldwin or Sol.

C. Lemmer in view of Depauw

Turning to the rejection over Lemmer in view of Depauw, for claims 1 and 15, Appellants rely upon the same arguments as presented for the Hartig/Depauw rejection. We determine that contrary to the arguments of Appellants this rejection is not subject to the same error as the rejection over Hartig in view of Depauw. While Appellants contend that Lemmer

“essentially discloses in Figs. 1-2 the same coating as Hartig” (Br. 21-22), there is an important difference: Lemmer describes the use of a NiCrO_x layer (Lemmer, col. 1, ll. 40-60). We agree with the Examiner that it would have been obvious to place a ZnO layer over the NiCrO_x layer of Lemmer to obtain the optical and corrosion properties that Depauw discloses will result when such a ZnO layer is placed over a sacrificial layer, NiCrO_x being known as a sacrificial layer material. Moreover, Depauw provides evidence that it was known in the art to heat treat and that heat treating increases light transmission (FF 15-16). We also find that the prior art provides guidance as to how to routinely optimize the layer compositions and thicknesses to obtain visible transmission within the range of the claims (FF 11-14). Moreover, for the reasons stated above with respect to the rejection over Glaser in view of Depauw, we do not find Appellants’ showing of unexpected results sufficiently probative.

The totality of the evidence weighs in favor of a conclusion of obviousness within the meaning of 35 U.S.C. § 103(a).

Appellants again advance separate arguments for claims 11 and for the group of 30 and 32. For the reasons stated above with respect to the rejection over Glaser in view of Depauw, we do not find these arguments persuasive.

We sustain the rejection of claims 1, 4, 5, 11, 15, 18-20, 26, 30, and 32 over Lemmer in view of Depauw. Because Appellants do not argue the propriety of the rejection of claims 2 and 16 over Lemmer and Depauw further in view of Anzaki or Arbab; the rejection of claims 8 and 23 over Lemmer and Depauw further in view of Baldwin or Sol; or the rejection of claims 12-14, 27, 31, and 33 over Lemmer and Depauw further in view of

Hartig or the admitted prior art, we summarily sustain those rejections for the same reasons set forth in the Answer.

D. Lemmer, Depauw further in view of Koch

The Examiner rejects claims 6, 7, 21, and 22 over Lemmer and Depauw and further in view of Koch. Appellants contend that there is no suggestion or motivation to modify Lemmer/Depauw as alleged by the Examiner (Br. 25). These claims require the addition of a tin oxide (SnO) layer (claims 6 and 21) and a combination of a SnO layer with an additional dielectric layer (claims 7 and 22). However, Appellants do not address the Examiner's finding that Koch discloses that it was known in the art to use SnO layers and other dielectric layers, nor the Examiner's specific finding of a reason for using such layers (Ans. 11). We note that not only does Koch describe adding SnO and other dielectric layers (*see, e.g.*, Koch, col. 1, l. 41 to col. 2, l. 2), the prior art as a whole suggests that various combinations of SnO, ZnO, NiCrO_x, and Ag layers were known in the art and that layer selection and placement depends on the properties desired in the end product, those properties being predictable (*see, e.g.*, Depauw, col. 3, ll. 25-37 and the examples).

We sustain the rejection of claims 6, 7, 21, and 22 over Lemmer, Depauw, and Koch.

III. CONCLUSION

In summary, we sustain the 35 U.S.C. § 103(a) rejections of: claims 1, 4-7, 11-15, 18-22, 26, 27, and 30-33 over Glaser in view of Depauw;

claims 2 and 16, Glaser and Depauw further in view of any one of Anzaki or Arbab;

claims 8 and 23 over Glaser and Depauw further in view of any one of Baldwin or Sol;

claims 1, 4, 5, 11, 15, 18-20, 26, 30, and 32 over Lemmer in view of Depauw;

claims 2 and 16 over Lemmer and Depauw further in view of any one of Anzaki or Arbab;

claims 6, 7, 12, and 22 over Lemmer and Depauw further in view of Koch;

claims 8 and 23 over Lemmer and Depauw further in view of any one of Baldwin or Sol; and

claims 12-14, 27, 31, and 33 over Lemmer and Depauw further in view of any one of Hartig or Applicant's Disclosure.

We do not sustain the rejections of:

claims 1, 4, 5, 11-15, 18-20, 26, 27, and 30-33 over Hartig in view of Depauw;

claims 2 and 16 over Hartig and Depauw and further in view of any one of Anzaki or Arbab;

claims 6, 7, 21, and 22 over Hartig and Depauw further in view of Koch; or

claims 8 and 23 over Hartig and Depauw further in view of any one of Baldwin or Sol.

IV. DECISION

The decision of the Examiner is affirmed.

V. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tf/lis

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